PATENT COOPERATION TREATY



From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
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PCT

WRITTEN OPINION

**(PCT Rule 66)**

| | | |
|---|---|---|
| Applicant's or agent's file reference<br>50055-00031 | | Date of Mailing *(day/month/year)*<br>30 MAR 2005<br>REPLY DUE<br>within 2 months/days from the above date of mailing |
| International application No.<br>PCT/US03/30908 | International filing date *(day/month/year)*<br>01 October 2003 (01.10.2003) | Priority date *(day/month/year)*<br>02 October 2002 (02.10.2002) |
| International Patent Classification (IPC) or both national classification and IPC<br>IPC(7): H04N 7/173 and US Cl.: 725/118 | | |
| Applicant<br>SYMPHONY MEDIA SYSTEMS | | |

1. This written opinion is the first (first, etc.) drawn by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:

| | | |
|---|---|---|
| I | ☒ | Basis of the opinion |
| II | ☐ | Priority |
| III | ☐ | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| IV | ☐ | Lack of unity of invention |
| V | ☒ | Reasoned statement under Rule 66.2 (a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| VI | ☐ | Certain documents cited |
| VII | ☐ | Certain defects in the international application |
| VIII | ☐ | Certain observations on the international application |

3. The applicant is hereby **invited to reply** to this opinion.

**When?** See the time limit indicated above. ~~The applicant may, before the expiration of that time limit, request this Authority, to grant an extension. See rule 66.2(d).~~

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also** For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 *bis*.
For an informal communication with the examiner, see Rule 66.6

**If no reply is filed,** the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 19 March 2005 (19.03.2005)

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**WRITTEN OPINION**

International application No.
PCT/US03/30908

## I. Basis of the opinion

1. With regard to the **elements** of the international application:*

☒ the international application as originally filed

☒ the description:
pages 1-34, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☒ the claims:
pages 35-40, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☒ the drawings:
pages 1-6, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☐ the sequence listing part of the description:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

☐ contained in the international application in printed form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages NONE

☐ the claims, Nos. NONE

☐ the drawings, sheets/fig NONE

5. ☐ This opinion has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."*

WRITTEN OPINION

International application No.
PCT/US03/30908

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. STATEMENT

| | | |
|---|---|---|
| Novelty (N) | Claims 1-33 | YES |
| | Claims NONE | NO |
| Inventive Step (IS) | Claims NONE | YES |
| | Claims 1-33 | NO |
| Industrial Applicability (IA) | Claims 1-33 | YES |
| | Claims NONE | NO |

2. CITATIONS AND EXPLANATIONS

Please See Continuation Sheet

**Supplemental Box**
(To be used when the space in any of the preceding boxes is not sufficient)

TIME LIMIT:
The time limit set for response to a Written Opinion may not be extended. 37 CFR 1.484(d). Any response received after the expiration of the time limit set in the Written Opinion will not be considered in preparing the International Preliminary Examination Report.

**V. 2. Citations and Explanations:**
Claims 1, 4, 10, 11, 13, 14, 15, 20, 21, 22, 24, 25, 26, 27, and 33 lack an inventive step under PCT Article 33(3) as being obvious over Utsumi et al. (5,729,281) [Utsumi] in view of Bigham et al. (5,40,075) [Bigham].

Regarding claims 1, 26, and 27, Utsumi discloses a cable distribution system (fig. 2), comprising:

a) A headend (fig. 2, center station 1)

b) A plurality of service modules (fig. 2, selective distribution stations 10) associated with the headend (1), each service module receiving multiplexed channel signals from the headend (fig. 2, all channel signal 2) and providing it to each of a plurality of frequency converters (fig. 3, modulating portion 13) within each service module that each convert one of the video channels to a predetermined frequency (col. 8, lines 20-46); and

c) A plurality of interface units (fig. 2, subscriber devices 71) associated with each service module (10), there being one interface unit for each frequency converter of the service module (each frequency band, $f_{1...N}$ which is associated with each subscriber, col. 8, lines 20-46, is also associated with a respective modulating portion, col. 8, lines 2-15), each interface unit being located at a customer location, each interface unit receptive of one of the video channels converted to the predetermined frequency (col. 8, lines 20-46), the interface unit passing a video and an audio signal in the video channel to a video displaying apparatus (for display to a user).

Utsumi fails to disclose the headend is receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals and certain other ones of the video channels contain a plurality of digital video and audio signals multiplexed together to create a digital multiplex, selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals, wherein certain ones of the interface units can receive and decode both video channels containing a digital multiplex and video channels containing analog video and audio signals and wherein certain other ones of the interface units can receive and pass to the video displaying apparatus video channels containing analog video and audio signals, but cannot decode and pass to the video displaying apparatus video channels containing a digital multiplex.

In an analogous art, Bigham teaches a video distribution system (fig. 1) wherein the headend is receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals and certain other ones of the video channels contain a plurality of digital video and audio signals multiplexed together to create a digital multiplex, selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals (the broadcast consolidation section [BCS] 2100, col. 35,

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lines 31-54, has a series of tuner/receiver/decoders that receive both analog, col. 40, lines 55-61, and digital multiplex broadcasts, col. 41, lines 34-49, which are combined into a multiplexed channel signal at RF combiner 2144 in fig. 6), wherein certain ones of the receivers can receive and decode both video channels containing a digital multiplex and video channels containing analog video and audio signals and wherein certain other ones of the receivers can receive and pass to a video displaying apparatus video channels containing analog video and audio signals, but cannot decode and pass to the video displaying apparatus video channels containing a digital multiplex (some subscribers have equipment that receive just analog channels, while others have equipment that receives both analog and digital channels, col. 27, lines 50-61), providing the benefit of diverse selection of services to subscribers (col. 7, lines 6-10).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi to include the headend is receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals and certain other ones of the video channels contain a plurality of digital video and audio signals multiplexed together to create a digital multiplex, selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals, wherein certain ones of the interface units can receive and decode both video channels containing a digital multiplex and video channels containing analog video and audio signals and wherein certain other ones of the interface units can receive and pass to the video displaying apparatus video channels containing analog video and audio signals, but cannot decode and pass to the video displaying apparatus video channels containing a digital multiplex, as taught by Bigham, for the benefit of providing diverse selection of services to subscribers.

Regarding claim 4, Utsumi and Bigham disclose the system of claim 1, and further disclose cabling running between the headend and each of the plurality of service modules associated therewidth having sufficient bandwidth capacity to be able to efficiently carry signals at least as high as 750 MHz (Utsumi teaches using a very wide band transmission line between the center station and the selective distribution stations, col. 6, lines 42-63).

Regarding claim 10, Utsumi and Bigham disclose the system of claim 1, but fail to disclose each of the frequency converters in each of the plurality of service modules is a programmable converter.

However, it would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and Bigham to include programmable frequency converters, as making the modulating portions (Utsumi, fig. 3, modulating portion 13) frequency agile enhances the flexibility of the system by removing the limitation of restricting each modulating portion to transmitting to a fixed frequency.

Regarding claim 11, Utsumi and Bigham disclose the system of claim 1, but fail to disclose including a different bandpass filter associated with each frequency converter.

However, it would have been obvious at the time to a person of ordinary skill in the art to include a different bandpass filter with each frequency converter, as this would reduce the downstream noise and signal interference by removing all frequency elements that do not fall in the intended frequency range of the output of the frequency converter from the output of said converter.

Regarding claim 13, Utsumi and Bigham disclose the system of claim 1, wherein each service module utilizes the same predetermined frequencies as each other service module (Utsumi teaches each service module [selective distribution station 10] utilizes the same frequency bands, $f_{1..n}$ col. 8, lines 3-15).

Regarding claim 14, Utsumi and Bigham disclose the system of claim 1, wherein each tuner/receiver/decoder tunes, receives, and decodes a given video channel and that channel from that tuner/receiver/decoder can be displayed on very displaying apparatus associated with that headend (analog signals are able to be received and viewed by all customers, Bigham, col. 27, lines 50-61).

Regarding claim 15, Utsumi and Bigham disclose the system of claim 1, wherein the interface unit passes information back upstream to its associated service module that includes channel selection information (Utsumi, col. 8, lines 20-29).

Regarding claim 20, Utsumi and Bigham disclose the system of claim 1, further including cabling running between each service module and the plurality of interface units associated therewith, the cabling having a home run architecture (Utsumi, fig. 1, cable line 20).

Regarding claim 21, Utsumi and Bigham disclose the system of claim 1, further including cabling running between each service module and the plurality of interface units associated therewith, the cabling having a loop through architecture (Utsumi, fig. 2 cable line 20).

Regarding claim 22, Utsumi and Bigham disclose the system of claim 1, further including cabling running between each service module and the plurality of interface units associated therewith, the cabling having a tree and branch architecture (Utsumi, fig.

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1, cable lines 20 and 21).

Regarding claim 24, Utsumi and Bigham disclose the system of claim 1, wherein the headend is a local headend (Utsumi, fig. 1 center station 1).

Regarding claim 25, Utsumi and Bigham disclose the system of claim 24, further including a regional headend located at a location remote from the local headend, the regional headend providing video channels as selected frequencies to the local headend (Bigham, fig. 1, the video information providers are remote headends which provide video to the local headend 19).

Regarding claim 33, Utsumi discloses a cable distribution system (fig. 2), comprising:

a) A headend (fig. 2, center station 1)

b) A plurality of service modules (fig. 2, selective distribution stations 10) associated with the headend (1), each service module receiving multiplexed channel signals from the headend (fig. 2, all channel signal 2) and providing it to each of a plurality of frequency converters (fig. 3, modulating portion 13) within each service module that each convert one of the video channels to a predetermined frequency (col. 8, lines 20-46); and

c) A plurality of interface units (fig. 2, subscriber devices 71) associated with each service module (10), there being one interface unit for each frequency converter of the service module (each frequency band, $f_{1...N}$ which is associated with each subscriber, col. 8, lines 20-46, is also associated with a respective modulating portion, col. 8, lines 2-15), each interface unit being located at a customer location, each interface unit receptive of one of the video channels converted to the predetermined frequency (col. 8, lines 20-46), the interface unit passing a video and an audio signal in the video channel to a video displaying apparatus (for display to a user).

Utsumi fails to disclose the headend is receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals and certain other ones of the video channels contain a plurality of digital video and audio signals multiplexed together to create a digital multiplex, selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals, and a set top box associated with at least one of the interface units, the set top box passing a video and an audio signal in the video channel to a video displaying apparatus.

In an analogous art, Bigham teaches a video distribution system (fig. 1) wherein the headend is receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals and certain other ones of the video channels contain a plurality of digital video and audio signals multiplexed together to create a digital multiplex, selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals (the broadcast consolidation section [BCS] 2100, col. 35, lines 31-54, has a series of tuner/receiver/decoders that receive both analog, col. 40, lines 55-61, and digital multiplex broadcasts, col. 41, lines 34-49, which are combined into a multiplexed channel signal at RF combiner 2144 in fig. 6), providing the benefit of diverse selection of services to subscribers (col. 7, lines 6-10).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi to include the headend is receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals and certain other ones of the video channels contain a plurality of digital video and audio signals multiplexed together to create a digital multiplex, selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals, as taught by Bigham, for the benefit of providing diverse selection of services to subscribers.

Utsumi and Bigham fail to disclose a set top box associated with at least one of the interface units, the set top box passing a video and an audio signal in the video channel to a video displaying apparatus.

However, set top boxes are notoriously well known in the art as advanced devices which processe received video signals prior to display on a television, as set top boxes provide enhanced features and functionality.

Therefore, it would have been obvious at the time to a person of ordinary skill in the art to modify the system of Utsumi and Bigham to include a set top box associated with at least one of the interface units, the set top box passing a video and an audio signal in the video channel to a video displaying apparatus, as set top boxes provide enhanced features and functionality, such as overlays, parental control, recording, and electronic program guides.

Claims 2 and 3 lack an inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim 1, and further in view of Chen et al. (5,699,105) [Chen].

Regarding claims 2 and 3, Utsumi and Bigham disclose the system of claim 1, but fail to disclose metallic coaxial cabling running between each service module and the plurality of interface units associated therewith that is bandwidth limited so as to not efficiently carry signals appreciable above 350 MHz.

In an analogous art, Chen teaches linking subscriber equipment (set top box 13 in fig. 2) with service modules (curbside box 15 in fig. 2) with metallic coaxial cabling that is bandwidth limited (col. 6, lines 1-9), as lower bandwidth links are more economical.

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It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and Bigham to include metallic coaxial cabling running between each service module and the plurality of interface units associated therewith that is bandwidth limited so as to not efficiently carry signals appreciable above 350 MHz, as taught by Chen, for the benefit of using more economically viable linking means to connect subscribers to the service modules.

Claim 5 lacks an inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim 1 above, and further in view of Rakib (US 2002/0019984 A1).

Regarding claim 5, Utsumi and Bigham disclose the system of claim 1, but fail to disclose the headend also includes a block of Personal Video Recorders.

In an analogous art, Rakib teaches including a block of personal video recorders (hard disk array 289 in fig. 6) to provide customers with full video recording and playback functionality without requiring special customer premises equipment (paragraphs 96 and 97).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and Bigham to include in the headend a block of Personal Video Recorders, as taught by Rakib, for the benefit of providing customers with full video recording and playback functionality without requiring special customer premises.

Claim 6 lacks inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim 1 above, and further in view of Dunn et al. (5,721,829) [Dunn].

Regarding claim 6, Utsumi and Bigham disclose the system of claim 1, but fail to disclose the headend also includes a Video On Demand server.

In an analogous art, Dunn discloses including a video on demand server (fig. 1, media server 40) within a video distribution headend (fig. 1, headend 20, col. 2, lines 40-50), providing the benefit of immediate user satisfaction of video service desires by customers (col. 3, lines 13-20).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and Bigham to include in the headend a Video On Demand server, as taught by Dunn, for the benefit of providing immediate user satisfaction of video service desires by customers.

Claim 7 lacks an inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim 1 above, and further in view of Fries (6,317,885).

Regarding claim 7, Utsumi and Bigham disclose the system of claim 1, but fail to disclose the headend also includes a Personal Computer.

In an analogous art, Fries teaches including a personal computer (fig. 1, information server 46) in a video distribution headend in order to expand on the types of services available to customers (col. 3 line 66 - col. 4 line 28).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and Bigham to include a personal computer in the headend, as taught by Fries, for the benefit of expanding the types of services available to customers, such as Internet information.

Claims 8, 9, and 19 lack an inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim 1 above, and further in view of Nickolich (US 2002/0073431 A1).

Regarding claim 8, Utsumi and Bigham disclose the system of claim 1, but fail to disclose the headend also includes a DOCSIS frequency converter.

In an analogous art, Nickolich teaches including a DOCSIS frequency converter (cable modem termination system 10 shown in fig. 1A and paragraphs 17, 27, and 28) in a headend for the benefit of including data services in a video distribution network (paragraphs 4-6).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and Bigham to include a DOCSIS frequency converter in the headend, as taught by Nickolich, for the benefit of including data services to cable modems at a subscriber residence, such as providing Internet data.

Regarding claim 9, Utsumi, Bigham, and Nickolich disclose the system of claim 8, wherein a DOCSIS forward channel being carred from an Internet service provider to a customer is convted by the DOCSIS frequency converter to a different frequency for passage to the plurality of service modules and associated interface units (Nickolich teaches each MAC circuit supports a different downstream channel [different frequency] for providing data to customers, paragraph 17).

Regarding claim 19, Utsumi and Bigham disclose the system of claim 1, but fail to disclose the headend also includes a cable modem transmission system [CMTS].

In an analogous art, Nickolich teaches including a CMTS (cable modem termination system 10 shown in fig. 1A and paragraphs 17, 27, and 28) in a headend for the benefit of including data services in a video distribution network (paragraphs 4-6).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and

**Supplemental Box**
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Bigham to include a CMTS in the headend, as taught by Nickolich, for the benefit of including data services to cable modems at a subscriber residence, such as providing Internet data.

Claim 12 lacks an inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim 1 above, and further in view of DeRodeff et al. (5,828,403) [DeRodeff].

Regarding claim 12, Utsumi and Bigham disclose the system of claim 1, but fail to disclose each interface unit does not include a microprocessor.

In an analogous art, DeRodeffff teaches interface units (fig. 6, interace unit 18a) which receive information for passing along to subscriber equipment (fig. 6, set top 14 and TV 16a) that does not include a microprocessor, making the interface unit simple and inexpensive (col. 7, lines 17-28).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and Bigham to not include a microprocessor in each interface unit, for the benefit of low cost interface units.

Claim 16 lacks an inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim 15 above, and further in view of Fellows et al. (DOCSIS Cable Modem Technology, IEEE Communications Magazine, March 2001) [Fellows].

Regarding claim 16, Utsumi and Bigham disclose the system of claim 15, but fail to disclose the information passed back upstream to the service module also includes a DOCSIS return channel that is passed by the service module back to the headend and back to an Internet service provider.

In an analogous art, Fellows teaches accessing the Internet over a cable network by making requests from a home cable modem for IP data upstream over a DOCSIS return channel (page 202 - Introduction, page 204 -Return Path Modulation Format and Return Channels, and page 207 - DOCSIS 1.1).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and Bigham to include in the information passed back upstream to the service module a DOCSIS return channel that is passed by the service module back to the headend and back to an Internet service provider, as taught by Fellows, for the benefit of allowing subscribers to access the Internet over their cable television connection.

Claims 17 and 18 lack an inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim 1 above, and further in view of Kitamura et al. (6,188,871) [Kitamura].

Regarding claim 17, Utsumi and Bigham disclose the system of claim 1, but fail to disclose a processor and associated database in communication with the headend and the service module, the processor being functional to control the operation of the receiver/decoders and the database assisting the microprocessor in the functionality and in storing customer viewing preferences.

In an analogous art, Kitamura teaches a processor (fig. 3, CPU 109) and associated database (fig. 3, database 111) in communication with a television distribution headend (fig. 3, regional common use block 104), the processor being functional to control the operation of receiver/decoders 9fig. 3, converter 107) in the headend and the database assisting the microprocessor in the functionality and in storing customer viewing preferences (col. 8, lines 4-18), allowing for the recording of viewer selection data and to more efficiently control resources in the headend.

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and Bigham to include a processor and associated database, the processor being functional to control the operation of the receiver/decoders and the database assisting the microprocessor in the functionality and in storing customer viewing preferences, as taught by Kitamura, for the benefit of recording of viewer selection data and to more efficiently allocating receiver/decoder resources.

Regarding claim 18, Utsumi and Bigham disclose the system of claim 1, but fail to disclose the local service module will only convert a selected video channel to the predetermined output frequency associated with a particular interface unit if that interface unit is authorized to received the selected video channel.

In an analogous art, Kitamura teaches a local service module (fig. 3, regional common use block 104) will only allow a subscriber to receive a requested video channel if that subscriber is authorized to received the selected video channel (col. 8, lines 19-33), eliminating the need for scrambling and descrambling equipment when restricting access to premium channels.

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and Bigham to include only allowing a subscriber to receive a requested video channel if that subscriber is authorized to received the selected video channel, as taught by Kitamura, for the benefit of eliminating the need for scrambling and descrambling equipment when restricting access to premium channels, which lowers the overall cost of the system.

Claim 23 lacks an inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim 1 above, and further in view of McGowan et al. (US 2003/0018745 A1) [McGowan].

Regarding claim 23, Utsumi and Bigham disclose the system of claim 1, but fail to disclose one or more of the video channels includes MPEG-4 encoded information.

In an analogous art, McGowan teaches utilizing MPEG-4 compression for video services, as it provides much greater video

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compression, which is desirable for on demand video services (paragraph 30).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and Bigham to include MPEG-4 encoded information in the video channels, as taught by McGowan, for the benefit of the high compression ratio MEPG-4 achieves, which is highly desirable for services such as video on demand.

Claims 28-32 lack an inventive step under PCT Article 33(3) as being obvious over the prior art as applied to claim 26 above, and further in view of Decker et al. (6,009,465) [Decker].

Regarding claim 28, Utsumi and Bigham disclose the system of claim 28, but fail to disclose the video channels are spectrally inverted prior to passage to the interface unit.

In an analogous art, Decker teaches spectrally inverting video channels prior to sending them to customers in order to scramble the signals such that only authorized receivers will be able to properly decode and display certain video channels (col. 7, lines 16-31).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi and Bigham to spectrally invert video channels prior to passage to customers, as taught by Decker, for the benefit of scrambling signals to make them unintelligible to unauthorized users.

Regarding claim 29, Utsumi, Bigham, and Decker disclose the system of claim 28, wherein the interface unit spectrally inverts the received video channel to restore the original audio and video signal orientation before sending it to a set top box [video displaying apparatus] (as stated above regarding claim 28, the signals are being inverted originally for the express purpose of limiting cognizant reception of the signals to authorized users, and this is how an authorized receiver receives the video channel).

Regarding claim 30, Utsumi, Bigham, and Decker disclose the system of claim 29, wherein at least one interface unit includes a high side LO frequency converter (Decker, fig. 3, converter 124, col. 7, lines 16-31).

Regarding claim 31, Utsumi, Bigham, and Decker disclose the system of claim 28, but fail to disclose the spectral inversion is performed at the headend.

However, it would have been obvious to perform the spectral inversion at the headend, as this is where signal scrambing traditionally takes place.

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Utsumi, Bigham, Decker to perform the spectral inversion at the headend to comply with more traditional headend design.

Regarding claim 32, Utusmi, Bigham, and Decker disclose the system of claim 28, wherein the spectral inversion is performed at the service module (Decker teaches it is the channel modulators 135 which perform the inversion [scrambling], col. 4, lines 59-63, and these are located in the service module).

Claims 1-33 meet the criteria set out in PCT Article 33(2), because the prior art does not teach the claimed material.

Claims 1-33 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.